WHAT IS CLAIMED IS:

1. An optical module comprising:

a holder having a photoelectric transfer element package mounting hole for mounting therein a photoelectric transfer element package which houses therein a photoelectric transfer element, and an optical fiber mounting hole for mounting therein an optical fiber and a ferrule, said photoelectric transfer element package mounting hole being arranged on one side of said holder in axial directions thereof, and said optical fiber mounting hole being arranged on the other side of said holder in axial directions thereof;

a lens, arranged between said photoelectric transfer element package mounting hole and said optical fiber mounting hole in said holder, for causing said photoelectric transfer element to be optically coupled with said optical fiber; and

light-quantity damping means for damping the quantity of light, which is emitted from said photoelectric transfer element, before the light enters said optical fiber,

wherein said holder, said lens and said light-quantity damping means are formed of a resin material so as to be integrated with each other.

2. An optical module as set forth in claim 1, wherein said light-quantity damping means comprises a diffraction grating for preventing a high-order diffracted light beam from being coupled with said optical fiber.

3. An optical module as set forth in claim 2, wherein said diffraction grating satisfies conditional expression (1) so as to cause only a zeroth-order diffracted beam to be coupled with said optical fiber:

$$P < \lambda / [\sin[\tan^{-1}\{\tan\theta_{NA} + \Phi / L\}] - \sin\theta_{NA}] \quad (1)$$

wherein P denotes a spacing of said diffraction grating, and λ denotes a wavelength to be used, Φ denoting a diameter of said optical fiber, L denoting a distance between an end face of said optical fiber and said diffraction grating, and θ_{NA} denoting an angle ($NA = \sin\theta_{NA}$) for giving a numerical aperture (NA) of said optical fiber.

4. An optical connector comprising:

an optical module as set forth in claim 1; and

a housing for receiving and holding therein said optical module.

5. An optical connector as set forth in claim 4, wherein said light-quantity damping means comprises a diffraction grating for preventing a high-order diffracted light beam from being coupled with said optical fiber.

6. An optical connector as set forth in claim 5, wherein said diffraction grating satisfies conditional expression (1) so as to cause only a zeroth-order diffracted beam to be coupled with said optical fiber:

$$P < \lambda / [\sin[\tan^{-1}\{\tan\theta_{NA} + \Phi / L\}] - \sin\theta_{NA}] \quad (1)$$

wherein P denotes a spacing of said diffraction grating, and λ denotes a wavelength to be used, Φ denoting a diameter of said optical fiber, L denoting a distance between an end face of said optical fiber and said diffraction grating, and θ_{NA} denoting an angle ($NA = \sin\theta_{NA}$) for giving a numerical aperture

(NA) of said optical fiber.